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ABSTRACT

Viktor Karlovich Della-Vos is created as being the director and chief architect of Russian manual training. Born in 1829, Della-Vos received a degree in physical and mathematical sciences from Moscow University in 1853. He began his teaching career in 1854 as a teacher of Russian and eventually began teaching advanced mathematics in 1858. In 1860 he was sent to Paris to study the theoretical and practical aspects of machine tool building. He also spent time in London studying farm machinery. After returning to Russia in 1864, Della-Vos was made a professor of mechanics at the Petrovsky Academy. In 1867 he was made director of a Moscow vocational school, and in 1868 he was made director of the Moscow Imperial Technical Academy. His plans for the inclusion of theoretical content in workshop and laboratory courses were unique in their simplicity and detailed organization. His inclusion of manual training at the postsecondary level became famous worldwide. He spent much of his time in the 1870s exhibiting the technical academy's products and inspecting the best technical schools abroad. He died in 1890 after an illness that began in 1879. (This document consists of a translation of two articles from an 1891 work entitled "Recollections of Victor Karlovich Della-Vos" and an introduction to the translated text.) (MN)

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THE LIFE AND TIMES OF VICTOR KARLOVICH DELLA-VOS

by

John P. Schenck

Original Materials Translated by Serge Ginberg

I must confess that Victor Della-Vos has held a certain fascination for me ever since I was introduced (figuratively) to him in a graduate course in the history and philsophy of industrial education. But he seemed always to be a shadow figure, a man with one dimension; namely, Director of the Moscow Imperial Technical School. Bennett (1937) devotes a chapter to the Russian manual training system and mentions Della-Vos only in passing. Cremin (1961), in his masterful work on progressivism in American education, also alludes to Della-Vos, but only as director and chief architect of Russian manual training. And so it goes with other publications devoted to similar topics.

Egged on by the belief that students of industrial education deserve to know more about the roots of their discipline, I contacted the (then) Soviet ambassador to the U.S., Anatoly Dobrynin, and solicited his help to obtain information about both Della-Vos and the Moscow Imperial Technical School. Through his first secretary, E. Malayan, Mr. Dobrynin wrote that the information was not available at the embassy and that I should send my request to the V.I. Lenin Library in Moscow. I sent a

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"Dear Colleague" letter to the Lenin Library and received a wealth of materials from the Ushinsky National Pedagogical Library of the Academy of Pedagogical Sciences of the U.S.S.R. The cover letter by N. V. Bubekina, Vice President of Scientific Works at the library, explained, among other things that the Moscow Imperial Technical School is now called the Moscow Highest Technical Academy of N.A. Bauman.

The materials included photocopied chapters from a volume titled Recollections of Victor Karlovich Della-Vos dated 1891 and an article titled "Moscow Imperial Academy" from an encyclopedic dictionary dated 1895. My translator let me know that the Recollections material was written in the worst kind of prerevolutionary bureaucratise so we tried to couch the translation in more current terms, phrases, and sentence structure.

Several references in the Recollections material deserve comment to make them more intelligible. My translator insisted on using the term "academy" rather than "school" or "institute" when refering to the institution directed by Della-Vos because "academy" is the more accurate translation of the Russian term.

The Ministry of State Domains was the office of the national government that was responsible for reforming the conditions of the state peasants, i.e., peasants living on state lands. These reforms included the shift of taxation from persons to land,

additional allotments for poor peasants, some peasant self-government, and the development of financial assistance, schools; and medical care in the villages (Riasanovsky, 1969).

His Majesty's Own Chancery was a bureau whose purpose it was to deal with matters of personal interest to and in need of supervision by the Tsar; it was responsible for insuring that the emperor's orders were carried out and was outside of the normal governmental process. The Fourth Department of the chancery was charged with managing the charitable and educational institutions under the jurisdiction of the Dowager Empress Marie (Riasanovsky, 1969).

The Free Economics Society was founded by Empress Catherine the Great in 1765 to promote her philosophy and to encourage the discovery of new knowledge. But it became increasingly concerned with improving agricultural productivity and with the needs of country life through individual (as opposed to state) enterprise (Tompkins, 1953).

The two references to Della-Vos as a "confidential advisor" remain unclear, but a likely explanation is that Della-Vos was part of the ad hoc committee system outside the usual state machinery. As a rule, the committees carried out their work in secret, adding further to the already cumbersome administration of the empire (Florinsky, 1969).

Finally, the cause of Della-Vos' death remains unspecified. No reference was made to it in any of the literature available to me.

From: Recollections of Victor Karlovich Della-Vos, by I. Aristov

Victor Karlovich Della-Vos, who was Head of the Education Department of the Ministry of Information, confidential advisor, ex-director and distinguished member of the Moscow Imperial Technical Academy, and first president and distinguished member of the Polytechnical Union died in Paris on July 15, 1890 after a long and painful illness. Because of his notable administrative and educational contributions, his wide knowledge of both technical and liberal education, and his personal concern for his students, the members of the union voted to attempt a verbal picture of him as he was throughout his life.

I was given the honor of putting together his biography from factual information provided to me. I am more than glad to do so, but I must admit that I will be unable to offer any personal recollections because, regretfully, I did not know Victor Karlovich. But that shortcoming will be remedied by colleagues who were fortunate enough to know him well.

Victor Karlovich Della-Vos was born on January 31, 1829 in the Black Sea port of Odessa. His parents were descendents of foreigners who became Russian citizens; they owned a small estate in Bessarabia and a house in Odessa. Victor Karlovich was the oldest of seven brothers and one sister. His father, who was known for his kindness and goodwill, lost all of his wealth because of unsuccessfull business ventures, leaving the children all but destitute. As a child, Victor Karlovich was happy and able; he liked to study and learned to read with almost no instruction. Until the age of seven, he spoke only Italian. He received his earliest education in an Italian school at Zolotov, where two of his brothers attended with him. On finishing Richelieu Gymnasium, he went to Moscow University, where he was accepted without examination because he came with such a high recommendation from his gymnasium. Victor Karlovich finished his education at the university in 1853, at which time he received his degree in physical and mathematical sciences. In the same year, he carried out an agricultural experiment project which earned for him recognition for outstanding work.

In 1854, Della-Vos began his career. He moved to Odessa and became a teacher of Russian and a clerk in the Academy of Gardenkeeping of the Ministry of State Domains. In addition to doing clerical work, he was assigned to teach mathematics and physics at Richelieu Gymnasium; then in 1858, he was assigned to teach advanced mathematics at the gymnasium as a substitute for the regular teacher, who had to be gone for 15 months. In 1859,

he was made principal of a school belonging to the Armenian Church in Odessa. On October 29, 1859, orders from his superiors sent him abroad. In 1860, he was assigned to work for the Ministry of State Domains and his stay abroad was extended two years: he was to study both the theoretical and practical aspects of machine tool building. The ministry paid him 1200 rubles per year for his services.

During his stay in Paris, Victor Karlovich attended lectures by the best professors of mechanics at a conservatory of arts and trades. He started working in a factory and continued there for two years. During his first year, he worked as a simple artisan from 6 a.m. to 6 p.m. daily. Early in 1861, the Minister of State Domains, Mikhail Nikolayevich Muravyov, came to Paris. While touring the factory where Della-Vos worked, he was introduced to Della-Vos. The minister talked with him for several hours and learned that Della-Vos was working at the factory in order to get practical experience in mechanics and to prepare to receive his professor's degree. The minister invited Della-Vos to his house, where he (the minister) offered him a post at the newly reopened Petrovsky Agrarian and Forestry Academy as soon as Della-Vos was finished in France. Victor Karlovich gratefully accepted the offer and continued his job with renewed spirit.

In 1862, Victor Karlovich was made a member of the purchasing committee of the Petrovsky Academy and its farms. He was also

sent to the London World's Fair in order to study farm machinery. Upon reading Della-Vos' report of the fair, the Minister of State Domains made these comments: "The description of the fair stands out like all of the other works of Victor Karlovich. They reflect his wide knowledge, critical thinking, and dedication to the work assigned to him." He ordered the department to express his thanks to Victor Karlovich and to print the report in the ministry's journal.

After examining Della-Vos' report, the minister decided to extend Della-Vos' stay abroad until November 1, 1864 so that he could complete the duties assigned to him regarding the acquisition of educational materials for the Petrovsky Academy. At this time, Victor Karlovich presented his report of the farm machinery at the world's fair to the minister, for which he received acknowlegement. The stay abroad, which lasted five years, broadened Della-Vos' knowledge of scientific principles and allowed him to continue his service to the government by utilizing his broader understanding. In 1861, Victor Karlovich had been introduced in Paris to Mary Jane Pelt, who was the daughter of a French civil servant. They courted, and in August, 1864 were married in a Russian Orthodox Church in Paris.

After returning from abroad, Della-Vos was made a professor of mechanics in the Petrovsky Academy on November 1, 1864. In addition to being a professor, he was a member of the management committee of the academy; as such, he was sent to St. Petersburg

twice for the purpose of purchasing such educational supplies as physics, geodesy, and mechanics lab sets for the academy. In October of the same year, he was sent to the 100th anniversary meeting of the Imperial Free Economics Society as a representative of the academy.

In 1867, Victor Karlovich was sent to the Paris World Exhibition by the Ministry of State Domains for five months; while there, he studied technical publications and bought various objects for the educational management section of the ministry.

On finishing his work in Paris in August, 1867, and by order of his superiors, Della-Vos was made director of a Moscow vocational school. Then on July 1, 1868, he was made Director of the Moscow Imperial Technical Academy. During the time when the vocational school was becoming the Moscow Imperial Technical School, Victor Karlovich showed his exceptional administrative skills. His plans for the inclusion of theoretical content in workshop and laboratory courses were unique in their simplicity and detailed organization. The inclusion of handwork training at the postsecondary level became famous worldwide. Many of Della-Vos' administrative methods, especially those regarding the running of the machine shop, are still used today even though the academy itself has undergone several changes. He is often remembered by us for his valuable administrative and teaching achievements. Numerous problems relating to establishing the academy, which required many trips to St. Petersburg, led Victor

Karlovich to narrow his areas of concern. By his own request in 1871, he was relieved of his duties as professor at the Petrovsky Academy.

As Director of the Imperial Technical Academy, Della-Vos was assigned a variety of duties. In 1870, he was sent to St. Petersburg to show to the public and to certain public officials the products that the technical academy was to send to the All-Russian Manufacturing Exhibition; in the same year he took part in meetings of the Committee for Educational Planning for Vocational Colleges. In 1873, he was sent to an international fair in Vienna. In 1875, he was again sent abroad to inspect the best technical schools in Germany, France, and Belgium. In 1875, 1876, and 1877, he was sent to St. Petersburg to serve on a committee reviewing a project proposed by the Fourth Department of His Majesty's Own Chancery, and which related to the yearly report on the management of Empress Marie's institutions. In 1876, he was sent to Nikolaen to inspect the conditions of that area and to study the possibility of building a technical academy there, as suggested by Count D. A. Tolstoy. Then in 1878, Della-Vos was sent to Paris to make arrangements for an Imperial Technical Academy exhibition at the Paris International Exposition.

In 1879, Victor Karlovich was stricken with a serious illness and had to have an operation. On physician's orders, he requested that he be relieved of his duties. On April 6, 1880, by imperial

consent, he was relieved of his duties at the Imperial Technical Academy and was given the Badge of St. Anne for outstanding services and a pension of 2,520 rubles per year.

After leaving his position at the academy, Victor Karlovich joined the Imperial Chancery. In 1881, he was made a member of the committee on the management of Empress Marie's institutions and a vice-director of educational institutions governed by the Ministry of Information. Then in 1886, he was promoted to head the same institutions; he remained at this position until his death.

Such were the accomplishments of Victor Karlovich Della-Vos. The Emperor showed his appreciation by awarding Victor Karlovich numerous medals and badges as well as monetary gifts; in 1885, he was made a confidential advisor; in spite of this, he was greatly admired by foreign leaders. From the Austrian Emperor Franz Joseph, he received the Commander's Cross with a star; from the King of Wittenberg, the Badge of the Iron Crown; from the Kings of Norway and Sweden, the Commander's Cross and the Cavalry Cross of the Swedish Order of the Vase.

Victor Karlovich remained childless and was able to avoid the problems that go with child rearing. This provided him the opportunity to participate in a variety of activities. It is fair to say that his private activities constituted a second job. In order to better illustrate this point, I will now put

Della-Vos' many activities into chronological order.

In 1854, Victor Karlovich was made a member of the Imperial Farming Society in Southern Russia and, by request from the society, translated and published a French book titled Grape Growing and Wine Making, which was originally written by Tardan. By request of the same society, he translated and published in 1855 a book by Gerenk and Decan titled A Guide for Gardeners.

In 1857, he was made secretary of the society and in 1858 published its journal for the months of June, July, and August. In 1860, he wrote and published a book titled A Collection of Practical Physics Problems, which was used by all institutions governed by the Ministry of National Education.

Then in 1862, he was made a member of the Writers Guild of the Gorigeretsky Agrarian Institute. In 1865, Della-Vos was elected to the Free Economics Society, and in 1866 he became a member of the Russian Technical Education Association. In 1867, he became a member of the Imperial Moscow Society and of the Imperial Anthropology, Botany, and Ethnography Society. The society made him head of the science section in 1869.

In 1870, Victor Karlovich joined the Committee to Organize a Russian Manufacturing Exhibition and was appointed to the subcommittee for "machines, apparatus, and instruments;" in the same year, he was made a distinguished member of the Imperial

Agriculture Society.

In 1871, by order of his superiors, he was sent abroad for two-and-a-half months to gather information to help the committee put on the Moscow Technical Exhibition of 1872. For his contributions, he was praised by His Majesty the Count Constantin Nikolayevich, and from the Imperial Society he received an official letter of gratitude. Additionally, the Imperial Society established a yearly bonus for Della Vos, I. P. Arhipov, and A. S. Vladimirsky for their contributions to the exhibition.

Victor Karlovich was unanimously selected by the Natural History Society in 1872 to be a member. In 1874, the same society decided at its annual convention to make him a distinguished member. According to the by-laws of the society, a person could be made a distinguished member only if that person had made a significant contribution to science in Russia or had made an impact on the society itself. Article 20 said that to be elected a member was the highest honor bestowed by the society. By making him a member, the society expressed its full appreciation for his contributions.

Beyond all this, Victor Karlovich was a member of the Moscow Board of Sales and Manufacturing from 1870 to 1883; during the board's 1878 convention, he was one of 20 men chosen to represent it at an exhibition in 1880. He also took an active part in constructing roads in Moscow.

From this biographical essay, the reader can see how involved in and how valuable to his profession Della-Vos was. With deep regret, I must inform the reader of Victor Karlovich's untimely death resulting from a terrible illness that first appeared in 1879.

After moving to St. Petersburg, Victor Karlovich was frequently ill. In 1888, the illness grew worse and became life threatening. He moved to Feodonia where the good climate, the beaches, and the sea made him feel better. In 1889, he again became very ill and was moved to the Royal Village. On returning to St. Petersburg in September, he resumed some of his duties even though he still felt ill thoughout the winter. He was advised to go to Paris for an operation. Reassured by the hope of being cured, Della-Vos left for Paris on June 5, 1890, feeling as though he were already cured. But the feeling did not last long since he became very sick on the way. The illness increased in severity, causing him such pain that it was impossible to move him to a hospital; with great effort, he was moved to a hospital anyway on June 22. But even while being cared for by the best physicians and with his wife's support, his condition deteriorated. Because he was so weak, the surgeons could not operate on him. On Sunday, July 15, 1890 at 11:45 a.m., he passed away. His lifeless body was moved to the church where he had been married. Services were held on July 19 in the presence of His Imperial Majesty Nicholas Maximillianovich Romanov, who

was a friend and benefactor of the deceased. Nine days after his death, his body was sent to Moscow for burial. On the first of August, his body was placed in a church owned by the Imperial Technical Academy, where services were held with many friends, admirers, students, and co-workers present. A deep sense of loss, regret and sorrow could be seen in the mourner's faces. After the service, the body was moved to the St. Alexis Monastery's cemetery.

Rest in peace devoted worker, talented, sympathetic, and kind man.

From: Recollections of Victor Karlovich Della-Vos, by A. Ashliman and N. Tsirkunov

In February of 1867, Alexander Stepanovich Yershov died, just before the vocational school he directed became the Moscow Imperial Technical Academy. On the appointment of Victor Karlovich to direct the new academy, its proposed curriculum was again reviewed. It was generally agreed that Alexander Stepanovich had been a skilled director and that he knew what goals had to be pursued in order to prepare students for jobs in industry. Finding a competent director who could lead the academy in its initial phases proved to be a difficult

undertaking. We are pleased to report that a man with a college degree, with teaching experience, and with remarkable technical knowledge was found. His name was Victor Della-Vos. We will try to provide a short account of his work and accomplishments in that position.

The opening of the academy was on June 1, 1868. Beginning on September 1, arts and science courses were taught as scheduled, but curricula had to be planned, decisions made, faculty hired, courses designed, and lectures prepared for the year. These problems were discussed and resolved at a series of staff meetings headed by the director. The meetings continued weekly from August to November and monthly from November on.

Anyone who is familiar with education and with the committee process can appreciate the responsibilities assigned to the head of the curriculum committee; he had to guide discussion, reconcile differing points of view, and come up with a comprehensive solution to the curriculum problem.

During the first year, the sequence of courses for each subject was decided upon and then implemented; additionally, lists were made of the apparatus, models, machines, and other devices which were absolutely necessary for the academy's operation. The academy was indebted to His Majesty Prince Peter Georgovich Oldenburg for promoting vocational education in Russia; and the academy will always remember that it was the initiative of its

first director that started the academy on its way.

During the first year, the courses in mechanical technology were divided between two professors in order to separate fiber technology from metal and wood technology. This allowed the academy to invite the best specialist in papermaking in Russia to teach fiber technology--the now deceased Feodor Michailovich Dmitrien, who was former director of Malutin Brothers' paper factory at Ramensk. Many of his students are presently working in paper factories throughout the country, which only proves that by including the fiber technology course in the academy, the curriculum committee made the right decision.

In his report for the year 1868-1869, Victor Karlovich says, "Because the ratio of applicants to available openings is 2.5:1, it is necessary to expand vocational education in the Imperial Technical Academy. But the thing that delights us most is that among those enrolling in this institution there are many individuals from well-known families who recognize the benefits of the vocational education which the academy provides for their children. This is evidence of the excellent education provided by the academy."

"Questions still need to be asked: questions like: why is it that privately owned businesses do not last long and rarely pass on to the third generation? Why is it that our factories and plants lose a large portion of their capital and productivity when they

pass from father to son and then close in the third generation? And finally, why is it that our accumulated capital, collected through years of hard work, knowledge, and expertise frequently disappears without a trace after passing to the second generation? The answer is simple: because the business community continues to live in the present and does not support education that will benefit it and give it a positive role in our society. The Imperial Technical Academy by its organization and goals helps to solve many of these problems; it must prove itself to the business community and in return can demand the support that will help it reach its goals."

These words were spoken 20 years ago; they are still true and will continue to be true in the future. If this message is properly understood by the people to whom it is addressed, the business community will support the technical education that will permit it to better compete with foreign competition, which is presently regulated through high tariffs.

Comparing technical education in Germany, Switzerland, and Austria with our own, we notice that the three western states currently have about 2700 graduating students and we have only 270. In that regard, Victor Karlovich stated the following: "The comparatively low number of technical graduates in our country is the major reason behind abnormal development of our industries and for lack of the vitality which is so apparent in the countries of western Europe, especially in Germany."

"In spite of the considerable number of large factories and plants that are equipped with the latest equipment, our technical literature is not only lacking in reports of results, but is practically nonexistent because of too few qualified personnel. Our major plants are operated primarily by foreigners and we are dependent on the west for new ideas; we cannot even influence the development of new industries."

"In order to increase our industrial base, we have fallen into the habit of buying fully equipped plants with engineers, managers, and sometimes even with workers. This method is justifiable on a temporary basis, but should it become the only means of future technical development, both the people and government will react. This will include the government's trying to make foreign industry more independent; that is, to compel it to break its ties with the west, which will deny us foreign expertise. The only way to deal with this problem is to increase the number of vocational schools and the number of students attending them. I might add that this method has already proved successful in Western Europe."

The Ministry of Finance, realizing the problem, appointed a commission to begin work on opening a technical academy in Charkov. By 1870, the academy in St. Petersburg was full and many bright students had to be turned away.

At the same time, the Institute of Railway Engineers added courses to its curriculum and hired more faculty in order to accommodate the increase in numbers of students seeking admittance to that school. One technical school could not admit additional students because admission requirements excluded students who had not taken preparatory courses in high school.

Victor Karlovich had no tolerance for such conservative schools because they impeded the nation's ability to meet its need for well-educated technicians. Additionally, some institutions accepted younger students because of a "request" from their parents and without consideration for the students' abilities; this resulted in their falling behind their classmates academically and, consequently, lowering the academic level of the class as a whole.

To develop an educational plan that would eliminate variations in educational policy, the Technical Education Association formed a committe with the now deceased Aleksey Vasiliyevich Letnikov as its president. The committee developed a plan which would permit students who had completed certain classes in high school to attend upper-level classes at the academy.

The acceptance of these students into lecture classes caused a lot of worries and problems for the administration since many of these students lacked the necessary arts and science preparatory classes. But the program proved itself and now the number of

students admitted could be increased from 26 to 60.

Increased enrollment in advanced classes permitted closing first, second, and third year preparatory classes, which were part of the old system. After this, the academy took on the character of a specialized postsecondary school and accepted students from all over the country.

The technical academy owes the superb organization of its shops to Victor Karlovich. His knowledge and love of mechanics and his evaluation of teacher performance resulted in an education which taught students what they needed to know as engineers and mechanics. This education was part of a natinal plan that every professor had to follow. Additionally, the plan eliminated variations caused by every professor and every school following their own notions of what was good teaching.

This new plan was like none used by any other country and had to be introduced to the world. It got that chance in 1876 at the Philadelphia Centennial Exposition. The Imperial Technical Academy presented its new system of education as part of a general exhibition.

In fact, this exhibition caught the interest of many pragmatic Americans. In U. S. engineering schools, hands-on skills were not taught at all, as was the case for many Western European countries; the school systems of these countries expected

students to get experience on their own time or whenever the chance presented itself.

Before the exposition even closed, the President of the Massachusetts Institute of Technology, Professor Runkle, praised Victor Karlovich's methods of education, which the college decided to adopt completely. In his speech about the system of technical education in Russia, Runkle said, "Based on the ideas that we got from Russia, it is becoming clear what the goals of our college should be; we must immediately expand and improve engineering courses by building workshops, which I feel is my duty to recommend." Soon after the exposition, M.I.T. built a special building which was to house workshops so that the ideas introduced by the technical academy could be put to use in America.

Subsequently, many other colleges in the U. S. adopted the system. The fact that the system was adopted from Russia was important in that it got the attention of many Western Europeans.

Always trying to raise the level of education in both theoretical courses as well as practice courses, Victor Karlovich recognized that his many trips abroad to gather technical information contributed greatly to that end. Indeed, sending qualified men abroad to fairs and expositions helped the attainment of Russian educational goals because these events showed current trends and new developments in various industries. It is better to see new

inventions first-hand than just to read about them. Everyone who had the chance to go abroad to see new developments in their particular area of teaching owe their thanks to the now-deceased director and his superiors, who made the trips possible. One way of showing gratitude to exceptional students was to send them abroad after they graduated.

It is fair to say that Victor Karlovich was the driving force in the academy and that his enthusiasm served as an example to all of his colleagues. A few words need to be said about the relationship between Victor Karlovich, his colleagues, and his students. By accepting the role of director, Victor Karlovich also accepted the role of father figure. He always accepted responsibility, always corrected his subordinates' mistakes kindly, always sought out and found deeds to be rewarded. He let his subordinates act freely within the limits of their responsibilities and always recognized their accomplishments.

From time to time he visited faculty meetings, sometimes pointing out important facts and ideas. At other times he remained a listener and left when he wanted to demonstrate his complete trust in his associates. He tried to be both a friend and director at the same time. Strict and demanding, Victor Karlovich strongly believed that by talking face-to-face with his students he could convince any of them and could weaken any stubborn individuals. He said to the Academy Inspector of Discipline, "Anyone who refuses to learn, send them to me." So,

at the bottom of his management style was the deceased's fatherly influence, which was never accompanied by any sort of punishment.

His techniques were never forgotten by those who were a part of them. Now Victor Karlovich is gone, but what he said lives on in the mind of his children! He tried to bring out the best in his "young technicians." His chambers were always open to students: there they found a father or a brother instead of a director: a person who would listen to anything that they had to say. Victor Karlovich always paid close attention to the works of his "young technicians." Nowadays, the academy has a whole department that takes care of that, whereas Victor Karlovich took it all upon his own shoulders. When one talks about Victor Karlovish's relation with his students, one talks about his personality. Let us try to put this point into the words of the deceased.

Della-Vos regularly prepared a yearly report on the activities of the academy and read this report at graduation exercises. If you could read these reports, you would sense his professional strength, which was so admired by his students. Much of the success of his system of discipline can be attributed to his personality, but what attracted others to him was his reputation as a person devoted to serving his country, as a patriot, and as a hard worker who put the law above all. This is what attracted everyone to him. Victor Karlovich was a friend to his students as well as a very demanding administrator.

If you read Victor Karlovich's annual reports you will find much food for thought in them. Here is a farewell address he made to his staff and to the students graduating in 1871: "Let us use this moment to once more say goodbye to you students whom we may never see again. Let us express our gratitude to you and wish you the best of luck. There is no need to remind you of the basic ethical principles held dear by every citizen who is concerned for the interests of his country. Such reminders are not necessary because if we mention them it will seem as though we have no trust in you. We believe that studying science is not only a tool for educating young people, but that it also serves to teach cultural morality. We will tell you that you should not forget this institution, the place where you expanded your knowledge and ethics; also, you should not forget the professors who still carry on their educational duties. At the same time that they observe the progress of their graduates, they are happy when these graduates are successful in their fields. When any of our 'young technicians' feel lost or lack energy, it is not hard to guess to whom they will turn. The science and ethics you learned at this academy will always tie you to its faculty and staff."

"As we send you 'young technicians' into your new life, we cannot help but remind you that you are beginning a new education in which hard work and persistence have as much value as they did in the academy. The only difference is that if you do not find a manager on your jobs who is interested in Russian industrial

progress or who does not look to the future or who does not try to reach national goals, you will have to rely on your own initiative."

"We are not worried about you; in fact, we strongly believe that the ethical principles that you acquired here will guard you against all kinds of mistakes which are frequently made by young and inexperienced people."

"The lower the technical level at which you begin your jobs, the more likely it is that you will achieve success; the greater your store of knowledge, the easier it will be to carry out such a responsibility as managing a factory because you have already been through all of the steps of technical processes."

"God willing, our Russian technicians will follow the ethical rules that have proven successful in Europe and for our own king, the exalted ruler, His Majesty Peter the Great!"

From: "Moscow Imperial Academy," by Brocgaus and Efron

In 1826, Empress Marie decreed the opening of various workshops in Moscow. These workshops were for learning various trades and were to accommodate up to 300 orphans. On July 1, 1830, a

statute was passed that changed the workshops to formal vocational schools; the first school was opened in 1832. The program of studies for this school took six years to complete: three years of preparatory classes and three years of vocational classes. Fifty of the 300 students were given a stipend of 70 rubles per year; these students were the children of merchants, bureaucrats, and tradesmen. Pupils who completed the program of studies earned the "skilled master's" degree; those who did not complete the preparatory courses were granted a "master's" degree or "junior master's" degree. By a decree of 1868, the vocational school was rededicated as the Moscow Imperial Technical Academy; it was organized like most other postsecondary schools, with nine years of classes. The first three years were divided into three areas: machine construction, mechanical engineering, and manufacturing processes. The other six years consisted of general and specialized courses. In 1887, the academy was transferred from Empress Marie's jurisdiction to that of the Ministry of National Education. In 1888, a committee was formed to administer the stipends to needy students. In 1895, the ministry approved a new plan for the academy. The plan calls for two technical areas: mechanical and chemical. The whole program will last for five years. The academy has such courses as: God's Laws, Advanced Math, physics, chemistry, anatomy, physiology, mineralology, architecture, geography, machine construction, manufacturing processes, metallurgy, political economy, geodesy, statistics, bookkeeping, foreign languages, drafting, and art. The courses include experiments in physics,

chemistry, mechanics, and natural sciences. Students are accepted into the academy if they have a diploma from a secondary school. Tuition is 75 rubles per year. Students who finish the program with top grades graduate as mechanical engineers; those who do not, as a mechanic or technician. The director is chosen by the Education and Artisan Committee. The faculty consists of eleven professors and six assistant professors. The Inspector of Educational Workshops was in charge of workshops, while the state engineer was in charge of the physical plant. At the beginning of the 1895-96 school year, there were 656 students in the academy. From 1870 to 1895, 975 students graduated from the academy. The yearly budget was 207,508 rubles, which came from student fees and from donations. The academy has a physics lab, a mechanical lab, a geodesy lab, and a natural science lab. The library has 11,056 volumes.

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